SOLUTION OF A PROBLEM TO THE FLOW OVER THE ROUGHNESS ELEMENTS OF A SPECIAL FORM IN A STRONG MAGNETIC FIELD

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Analytical solution of the problem about MHD flow of a conducting fluid in half space $\tilde{z} > 0$ with a roughness of special form on boundary $\tilde{z} = 0$ is obtained. External magnetic field is perpendicular to boundary$\tilde{z} = 0$. There is also external current, which is parallel to boundary$\tilde{z} = 0$, if the roughness is absent. The flow of fluid arises only in the case, if the roughness of boundary $\tilde{z} = 0$ exists. The choice of the roughness in the form of infinitely long prism with constant cross-section, bounded by the broken line, allows to obtain the analytical solution of this problem at the single approximate assumption that the height of this cross-section is small. The asymptotic solution of the problem at the large Hartmann numbers is obtained. In this case the various boundary layers of the flow and the induced current are found. The results of numerical calculations of x- and y-components and streamlines of induced current are presented.